

THE STATE OF TABLE GRAPE VARIETIES IN R. MACEDONIA

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ABSTRACT

In this work is given for surfaces and production of table grapes, conditions and the way on growing, the structure of the assortment, consumption of fresh grape (at home and export) as well as cold storage capacities and the possibility for storage.

Analyses showed that R. Macedonia disposes with 7.424 ha vineyards with table grape, and average production in year is 71.588 t grapes. The consumption in the home market is 12.000 t (6 kg/citizen), and the export from 9.821 t (2004 year) to 15.648 t (2005 year).

In the structure of varieties are maintained sorts of different periods (eras) of growth and the possibility of his keeping is different (from 1 to 5 months).

For successful and quality production of table grape is recommended: first make climate zoning and proper timetable of the table assortments in wine units, using of proper ampelotechnics measures for bigger quality, establishment of standards and formation of packing centers in complex of cold-storage capacity.

Key words: preview, table grape, production, storage

1. INTRODUCTION

The Republic of Macedonia has agro-ecologically favorable conditions for growing table vine varieties with different period (epochs) of ripening.

Vineyards are present on an area of 22.401 ha (2008). Of the total area under vineyards, only 30% are table varieties or 7.427 ha with the annual production of about 71.588 tons. Most of these areas (90%) are located in warmer vineyard regions (Tikvesh, Gevgelija - Valandovo) that have the best conditions for growing table grapes. They are characterized by an average temperature of 12.40°C to 14.80°C, an annual temperature sum of 4500-5400°C and a vegetation temperature sum of 3900-4600°C.

In the assortment structure there are varieties with different period of maturity beginning from those that mature very early (July Muscat, Demirkapija, Black Magic), early (Cardinal), moderately delayed (Afus Ali, Muscat Hamburg, Muscat Italy, Paglieri, Ribier, Victoria) and very late varieties (white winter grape, Drenok, Moldova).

Table grapes have nutritional, dietetic and therapeutic value that comes from the rich chemical composition as follows:

- 1 kg of grapes has energy value from 700 to 1000 calories, which can replace the consumption of 1.190 g of potato, 387 g of meat, 227 g bread, etc.
- contains 150-180 g / l of sugar - glucose and fructose
- contains mineral substances: K, Na, Ca, Mg, P in the form of phosphoric acid, S, Fe, Cu, Mn, Zn and other (from 0.3 to 0.5%), vitamins of group A, B and C whose content is highest at the physiological maturity of the grapes
- it is rich in organic acids and free pectin materials etc.

2. AREAS WITH VINEYARDS AND GRAPE PRODUCTION

In Table 1 the statistical data on areas of vineyards are given, their share in the total cultivated area and the production of grapes for the period 2000-2008, and the average for the period from 1995 to 1999.

Table 1. View of the area under vineyards and grape production for the period 2000-2008 year

Year	Total arable land ha	Vineyards		Production of grapes t
		ha	%	
1995-1999	638.250	28.700	4,50	227.462
2000	633.233	28.304	4,47	230.104
2001	598.230	27.677	4,62	264.256
2002	611.982	27.778	4,54	229.805
2003	569.246	27.103	4,78	243.821
2004	560.264	26.141	4,67	254.613
2005	545.514	26.023	4,77	265.717
2006	537.419	24.266	4,51	254.308
2007	526.477	22.665	4,30	209.701
2008	521.193	22.401	4,30	236.834
Average yield 9.257 kg/ha				

The global design (Strategy for Agricultural Development to 2015) for the development of the viticulture and viniculture sector anticipates an increase of vineyards areas of up to 40.000 ha. So far, the projection is not realized, and there is a significant reduction in the vineyards area.

During the period between 1995 and 1999 the Republic of Macedonia had an area of 28.700 ha of vineyards, and from 2000 to 2008 there was a considerable decrease. During that period (2000-2008) the area was 25.916 ha, and it varied from 28.304 ha in 2000 to 22.401 ha in 2008, which is for 6.299 ha less compared to the period 1995-1999.

The production of grapes for the period 2000-2008 equaled to 239.917 tons, and it ranged from 209.701 tons in 2007 to 264.256 tons in 2001. Although during the period 1995-1999 there was a significantly larger area (28.700 ha) compared with the period 2000-2008 (22.401 ha), there were no significant differences in the amount of grapes produced. This is due to the improvement in the age structure with raising new vineyards, thus increasing the yield per area unit (hectare). However, the average yield of 9.257 kg / ha is low indicating the still unfavorable age structure, and in some years the climate conditions also had an impact.

3. AREAS, PRODUCTION AND MARKETING OF TABLE GRAPES

The areas with table sorts in the total area of vineyards accounted for about 30%.

Table 2 provides data on the areas and production of table grapes for the period 2003-2008.

The total average area with table varieties for the period 2003-2005 was 7.427 ha, and ranged from 6.720 ha in 2008 to 8.130 ha in 2003. The production of table grapes for the analyzed period ranges from 62.910 tons in 2007 to 79.715 tons in 2005, or an average of 71.588 tons.

The average yield of 9.650 kg/ha is low, indicating the still unfavorable age structure, not using standard or certified material during the startup of new plants, and in some years the climate conditions also had an impact.

Table 2. Areas and production of table grapes for the period 2003-2008 year

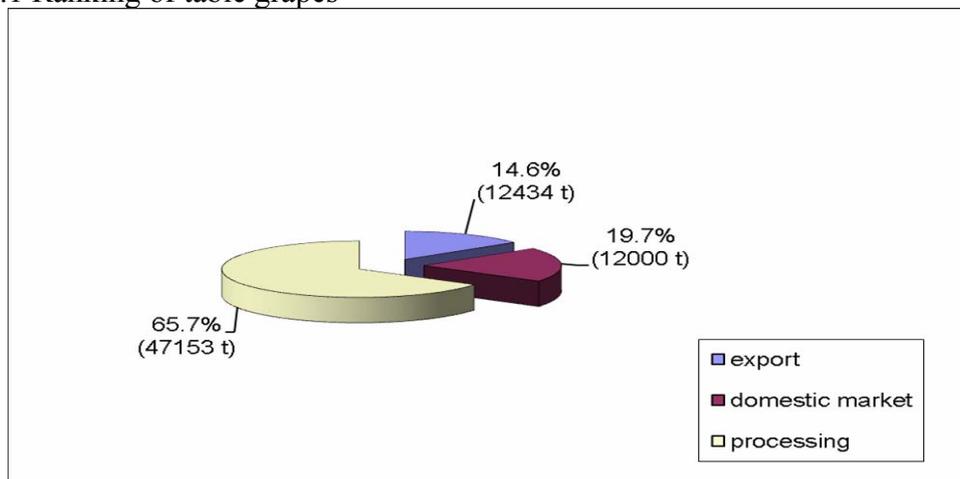
Year	Vineyards ha	Production of grapes t
2003	8.130	68.267
2004	7.840	73.838
2005	7.806	79.715
2006	7.280	73.749
2007	6.790	62.910
2008	6.720	71.050
2003-2008	7.427	71.588
Average yield 9.650 kg/ha		

The varieties of table grapes are mainly intended to be consumed in fresh condition. According to statistics in the Republic of Macedonia (Table 3) the consumption of table grapes in fresh condition was 6 kg/per capita, or 12.000 tons annually, or only about 20% of the total production. The amount of grapes exported in the analyzed period was 12.434 tons (14.6%), and ranges from 9.821 tons in 2004 (13.3%) to 15.648 tons in 2005 (19.6%). These exported quantities as well as the quantity of the domestic consumption of table grapes in fresh state are small, so about 65% of the total quantity remains for processing. This quantity of table grapes is used for the production of grape concentrate and distillation, and negligible amounts for the production of jams, juices, etc.

Table 3. Production and sale of table grapes (in tons)

Year	Production of grapes	Export		Domestic market	Gapes for processing	
		t	%		t	%
2003	68.269	10.585	15,5	12.000	45.682	66,9
2004	73.838	9.821	13,3		52.017	70,5
2005	79.715	15.648	19,6		52.067	65,3
2006	73.749	12.453	16,9		49.296	66,8
2007	62.910	12.626	20,0		38.281	60,8
2008	71.050	13.471	19,0		45.578	64,0
2003-2008	71.588	12.434	14,6			65,7

Graf.1 Ranking of table grapes



4. ASSORTMENT AND QUALITY PROPERTIES OF TABLE GRAPES

The specific climatic conditions in the Republic of Macedonia allow the cultivation of table varieties with different maturity: from those that are very early, early, middle late and late to very late, as well as seedless varieties. They are most frequent in the warm wine region, i.e. in Tikves, Veles, Gevgelija – Valandovo and Strumica --Radovis wine regions. In the assortment structure of products, the leading place is still held by the following varieties: Afus Ali (40%) and Cardinal (15%), followed by Ribier, Paglieri, Muscat Hamburg, Muscat Italy, winter white and other varieties. In the last ten years, the assortment has been enriched by raising new varieties of Black Magic, Victoria, Moldova, Agadaj, etc.

The quality of table grapes is determined according to outward appearance - organoleptic properties (size, shape, coloration), the structure of the grape cluster, the mechanical properties of grain (resistance to pressure and resistance to tearing), the chemical composition of must (sugar and total acids, mineral substances etc.).

The production of quality grapes, apart from climate-soil conditions, greatly depends on the cultivation, the application of necessary ampelotechnical measures (optimal load of grapes, thinning out of grape clusters, pinching of a cluster in a certain phenophase, ringing etc.).

One of the important elements in the production of table grapes and the percentage of packed grapes here is about 60%, which is below the level (in Italy it is over 80%) of many other countries, producers of table grapes. This is the result of insufficient application of specific agrotechnical and ampelotechnical measures, unfavorable age structure, etc.

5. POSSIBILITIES FOR STORING TABLE GRAPES

During the period of ripening of the table grapes market surpluses occur. With the aim of bridging of the surplus of grapes and extending of time for consumption it is kept in cold conditions. In the Republic of Macedonia there are coolers for storage of grapes and fruit with a total capacity of about 35.000 tons. 90% of these are currently not fully operational, they have outdated systems and equipment and are underutilized, with only a capacity of 5.000 tonnes in full function.

6. PERSPECTIVES AND RECOMMENDATIONS

The environmental conditions in the Republic of Macedonia, especially in warm wine regions, allow successful cultivation of table varieties from all periods of ripening. The produced grapes are characterized with high technological features.

Measures to improve the quality of table grapes:

- ▶ Clonal selection, introduction of promising clones of the most important table varieties
- ▶ To perform climatic zoning and orderly arrangement of varieties according to vineyard units (regionalization).
- ▶ Proper selection of surface-breed in order to obtain the maximum quantity and quality of grapes.
- ▶ Introduction of a unified system of farming and intensive industrial nature of production.
- ▶ The application of ampelotechnical measures is necessary, including: planning a return by means of pruning, pinching and thinning of clusters, partial defoliation and other.
- ▶ Application of bioregulators for growth of grape and grain, and with some varieties these also affect the improvement of the mechanical properties of grain (it improves transportability and enables longer storage).
- ▶ Implementation of a system for standardization, processing and packaging of table grapes.
- ▶ Formation of packing centers within the cooling-storage facilities and introducing a modern way of packaging using the Euro Pallet system for placing grapes on foreign markets and for easier handling during transport and storage in coolers.

- ▶ Full utilization of science on one side and on the other maximum organization and establishment of professional high-level relationships between producers and merchants of table grapes, with the aim of maximizing the overall potential existing in the Republic of Macedonia.

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